

What is Claimed is:

1. A method of providing a complete nucleic acid sequence encoding a gene of a *ibeA* gene cluster, comprising the steps of:
 - (a) identifying *Escherichia coli* structures that contribute to an invasion of BMEC
5 to a *ibeA*;
 - (b) extracting and purifying said *ibeA* from said *Escherichia coli* structures;
 - (c) analyzing said extracted and purified *ibeA*; and
 - (d) determining a complete nucleic sequence of *ibeA*.
2. The method, as recited in claim 1, further comprising the steps of
 - 10 (e) generating a *ibeA* in-frame deletion mutant;
 - (f) combining a *ibeA* in-frame deletion mutant to a *ibeA* to form a transformants;
and
 - (g) conducting complementation analysis to test an invading ability to BMEC.
3. A probiotic for preventing and treating neonatal meningitis causing meningitic
15 microbes, wherein said probiotic comprises live microorganisms in origin suppressing
meningitic virulence factor.
4. The probiotic, as recited in claim 3, wherein said meningitic virulence factor
includes GimA.
5. The probiotic, as recited in claim 3, wherein said meningitic microbes are
20 selected from a group consisting *E. coli* K1 carrying GimA and Group B *Streptococcus*
(GBS).

6. The probiotic, as recited in claim 4, wherein said meningitic microbes are selected from a group consisting of *E. coli* K1 carrying GimA and Group B Streptococcus (GBS).

7. The probiotic, as recited in claim 3, wherein said meningitic microbes are selected from a group consisting of *E. coli* bacteria, GBS bacteria, *Listeria monocytogenes* bacteria, *Pseudomonas* species bacteria, *Streptococcus pneumoniae* bacteria, *Neisseria meningitidis* bacteria, *Haemophilus influenzae* bacteria, *Citrobacter* species bacteria, *Candida albicans* fungus, enteroviruses, herpes simplex viruses, and *Toxoplasma gondii* parasites.

8. The probiotic, as recited in claim 4, wherein said meningitic microbes are selected from a group consisting of *E. coli* bacteria, GBS bacteria, *Listeria monocytogenes* bacteria, *Pseudomonas* species bacteria, *Streptococcus pneumoniae* bacteria, *Neisseria meningitidis* bacteria, *Haemophilus influenzae* bacteria, *Citrobacter* species bacteria, *Candida albicans* fungus, enteroviruses, herpes simplex viruses, and *Toxoplasma gondii* parasites.

9. The probiotic, as recited in claim 3, wherein said live microorganisms include bacteria selected from a group consisting of *Lactobacillus* species, *Bifidobacterium* species, *E. coli* Nissle 1917, and probiotic bacteria carrying antigens against one or more virulence factors including GimA.

10. The probiotic, as recited in claim 3, wherein said live microorganisms include yeast in origin suppressing one or more meningitic virulence factors including GimA.

11. A probiotic method for preventing and treating neonatal meningitis caused by meningitic microbes, wherein said probiotic method comprises administering a therapeutically effective prebiotic agents enhancing benefit effects of probiotic organisms and suppressing one or more meningitic virulence factors.

12. The probiotic method, as recited in claim 13, wherein said meningitic virulence factor is GimA.

13. The probiotic method, as recited in claim 11, wherein said prebiotic agents include oligo-saccharides selected from a group consisting of fructooligosaccharides (FOS), inulin, lactulose and galactooligosaccharides.

14. The probiotic method, as recited in claim 12, wherein said prebiotic agents
5 include oligo-saccharides selected from a group consisting of fructooligosaccharides (FOS), inulin, lactulose and galactooligosaccharides.

15. The probiotic method, as recited in claim 11, wherein said prebiotic agents include bacteria selected from a group consisting of Lactobacillus species, Bifidobacterium species, E. coli Nissle 1917, and probiotic bacteria carrying antigens
10 against one or more virulence factors including GimA.

16. The probiotic method, as recited in claim 11, wherein said prebiotic agents are nondigestible food substances that improve health by stimulating the growth or activity of beneficial bacteria and suppressing said meningitic virulence factors including GimA

17. A probiotic method for treating neonatal meningitis caused by meningitic
15 microbes, comprising a step of administering a therapeutically effective prebiotic agents enhancing benefit effects of probiotic organisms and suppressing one or more meningitic virulence factors.